

Chemistry 1B, General Chemistry

Chem 1B - Section 01Z

Lecture MWF - **Synchronous** - 9:30AM to 10:20AM

Lab MW- **Mix Synchronous/Asynchronous** – **Synchronous hours** 1:00PM to 2:20PM

Chem 1B - Section 02Z

Lecture MWF - **Synchronous** - 9:30AM to 10:20AM

Lab MW- **Mix Synchronous/Asynchronous** – **Synchronous hours** 2:30PM to 3:50PM

Instructor: Dr. Chris Deming, email: demingchristopher@fhda.edu

Office Hours: Monday 10:30AM to 11:30AM, Wednesday 10:30AM to 11:30AM, Friday 10:30AM-12:30PM

Course Description: This class will cover the principals of chemical kinetics, intermolecular forces, gases, weak acids/bases, chemical equilibrium, and thermodynamics.

This course is divided into two separate instructional periods, the lecture and laboratory sections. The lecture portion is primarily devoted to the material discussion while the laboratory portion gives a chance for chemical experimentation. One registration code will enroll for the lecture and lab sections. Lecture and lab sections must be taken together to pass Chem 1B and will both go towards a single grade.

Course Material:

1. Lecture Text: CHEMISTRY: The Molecular Nature of Matter and Change, Silberberg and Amateis, 9e. Other editions will be essentially the same and will work great to study, but practice problems given in this syllabus correspond to the 9th edition. Although there are online text options, we will NOT be using CONNECT or ALEKS this quarter. There are multiple options to obtain the text for this course depending on your specific needs.

- a. **Option 1** – Hard copy text. This can be used and any edition. I will give homework and solutions from the 9th edition, but you will find these questions in any edition but potentially with different numbering. This is the way to go if you prefer hard copies and is a great choice if you want a quality chemistry textbook to reference in the future. If you plan to take CHEM 1C, this option may be the best, since this will be the text used (at least until fall 2022), and you will likely be able to find a cheap, used copy.
- b. **Option 2** – 90 day access to an electronic text specifically for CHEM 1B. This is a great, cheap option that will give you 90 day access to an electronic text

for the chapters in this class (CHEM 1B) only. This can be purchased with the ISBN: 9781307600964. This is a great option if you do not plan to take CHEM 1C.

2. Lab: This quarter, we will use take-home lab kits from Science Interactive (Formerly Hands On Labs, HOL) to perform laboratory experiments at home. While the cost of the kits is covered, some experiments require materials provided by the student. A lot of these items are things that most will have in the house already, like paper towels or ice. Others will require items that are a little less common and will likely require purchasing these. There is nothing expensive, but making sure these items are available when it is time for the experiment will require ordering early. I have a list of needed material posted to CANVAS. If the cost is an issue, please let me know, and we can find another solution.

3. Scientific Calculator. Logarithm and exponential functions required. You are encouraged to bring your calculator each day to work through examples as they are presented. Phones will not be allowed for calculations during tests.

4. Safety Goggles. Proper eye protection is required for every lab. Goggles will be provided in the lab kit, but if you have others you would like to use, please let me know and I will help you check if they are chemistry approved.

5. Camera linked to the internet – For much of your classwork, you will need to take a picture of your work and submit to CANVAS. Phones are 100% okay. Please let me know if this is an issue as soon as possible.

Class Registration. Although we are not limited by the space in the lab, the registration limit is strictly set at 30 per section since we only have enough lab kits for those officially enrolled. The class will be filled based on the official roster provided by the De Anza Admissions and Records, including an official waitlist. Students on this waitlist may come for the lecture and lab for the first two weeks. Since meetings will be through Zoom, I will create a waitlist mailing list to give invites to lecture and send assignments up until the registration is finalized at the end of the second week.

Resources: Academic support can be found at the Learning Resources Division <https://www.deanza.edu/learningresources/>. Information about tutoring can be found at the Math Science and Technology Resource Center <https://www.deanza.edu/studentuccess/mstrc/>.

Academic Integrity: By enrolling in classes at De Anza College, you are agreeing to the academic integrity policy and are held to all standards. Specifics can be found at <https://www.deanza.edu/studenthandbook/academic-integrity.html>.

Cheating during an exam/quiz or copying/using work other than your own for a lab will result in a 0 for the entire assignment, regardless of what percentage of the work is from cheating.

Worse than a 0 on an exam, I am required to report such incidents to the disciplinary committee, who will make a note of the incident on your transcript, which then becomes visible to 4 year colleges upon reviewing your transfer application.

For this new remote delivery, we will all need to be honest with tests and quizzes. I am trusting all of you to adhere to this code.

Disability Service Support: De Anza is committed to providing support for students with disabilities. Please contact me as soon as possible if you require special accommodations and I will be happy to do what I can to help. For more information, visit Disability Service Support at <https://www.deanza.edu/dss/>

Classroom Conduct: I want to be very clear that this class is a place where everyone can feel safe to be themselves and to learn at their own pace. It is important to me that you feel comfortable to ask questions, and I hope you all will help me create a supportive atmosphere.

Tentative Dates. All exam dates, lecture topics/dates, lab topics/dates are listed on page 11 and are subject to change throughout the quarter. The final exam date will not change and is also provided on page 11.

Grades/Evaluations:

Assignment	Points	Percent
Quiz 1	25.0	2.7
Quiz 2	25.0	2.7
Quiz 3	25.0	2.7
Exam 1	100.0	10.8
Exam 2	100.0	10.8
Exam 3	100.0	10.8
Final Exam	150.0	16.1
Lecture Total	525.0	56.5
Student Welcome Questionnaire	10.0	1.1
Lab Safety	5.0	0.5
Gas Simulation Worksheet	25.0	2.7
IMF Worksheet	20.0	2.2
Lab Kit Check	5.0	0.5
Kinetics Prelab	15.0	1.6
Kinetics Experimental Data and Pictures	10.0	1.1
Kinetics Calculations	10.0	1.1
Kinetics Conclusion	15.0	1.6
Equilibrium Prelab	15.0	1.6
Equilibrium Experimental Data and Pictures	10.0	1.1
Equilibrium Calculations	10.0	1.1
Equilibrium Conclusion	15.0	1.6
Beer's Law Prelab	15.0	1.6
Beer's Law Formal Report	75.0	8.1
Boyle's Law Prelab	15.0	1.6
Boyles Law Experimental Data and Pictures	10.0	1.1
Boyle's Law Calculations	10.0	1.1
Boyles's Law Conclusion	15.0	1.6
Lab Final	100.0	10.8
Lab Total	405.0	43.5
Class Total	930.0	100.0

Grade Assignment. This rubric is subject to change throughout the quarter.

Grade	Percentage
A+	>98
A	98-93
A-	93-90
B+	90-87
B	87-83
B-	83-80
C+	80-76
C	76-70
D	70-60
F	<60

Lecture

This class (Chem 1B) will cover chapters 5, 12, 16, 17, 18, and 20 from the assigned textbook. All lectures will be held through Zoom during the indicated time period (**synchronous**), so please download this free application. For the lecture and lab room follow the link, <https://fhda-edu.zoom.us/j/6666427045?pwd=LzlrNCtiM0h1bk1FSjFTcDFOelRIQT09>

This link will also be on CANVAS under “pages”. The power point lecture slides will be posted before the lecture on CANVAS under files, and a link to the recording of the lectures will be posted afterwards under “pages”.

My general philosophy toward lecture is that I am looking to give a deep conceptual description of the concepts as well as a thorough review of the associated mathematics. The marriage of these two independent ways of understanding is ultimate goal. This means I will spend a significant amount of time in lecture describing the atomic scale dynamics as well as going over calculations.

Below are some helpful tips that make learning much easier this quarter.

1. Review the material before attending the lecture. This could include reading the section in the textbook, reviewing the lecture slides, or even glancing at the homework. This will help you develop a stronger and more personal connection the topics and make the presented material much easier to understand.

2. Don't only copy the words from the slides during lecture. Since I will give the lecture slides before the lecture, you will not need to copy down everything on the presentation. In fact, many of the slides are very dense with info, and it would take you too much time to copy all the words down.

Furiously copying the words on slides is not the best way to learn during a lecture and instead, writing down what I am saying and/or what you are thinking will be a much more successful method.

This can be done with a tablet, printing out the slides before, or writing in a notebook using the slide numbers.

3. Complete all homework problems and all of the in-chapter reviews. Extensive practice is the best way to ensure concept mastery. The more you practice, the more comfortable you will be, and the better you will perform on exams. Beyond the minimum of the assigned problems, you are encouraged to do the in-chapter problems as well as the end of the chapter problems that were not assigned. I am serious when I saw that I sometimes use problems from the book that I didn't assign as exam problems.

4. Don't fall behind. In chemistry, each new topic will build on the previous one so it is essential to understand the topics as they are presented. Following a lecture when you do not understand the previous material is not an effective method for learning and will lead to further problems. To avoid falling behind.....

5. Get help when you need it. If you are having a difficult time with a topic, it is your responsibility to get help. There are plenty of resources, including myself, for aiding in material comprehension, but it all starts with you making an effort to get this help. You are also encouraged to find a study group or coming to office hours.

Lecture Exams. There will be three lecture exams to test comprehension throughout the quarter. Exams will cover material from lectures, homework, and book chapters. If you are having difficulty completing the homework questions for that chapter, you are urged to get help *before* taking the test. Questions will range from easy to difficult and may require solving problems that have not been explicitly demonstrated before.

Each exam is worth **100 points**, and the dates are given in on page 11. Please note that these dates are subject to change depending on the pace of the material but I will try my best to stick to the schedule. No late or early finals will be administered. If you feel the grading of any exam is incorrect, please let me know and I will be happy to talk about talk with me. I will release a key after the exam, and I am very open to hearing what you have to say about the grading, but you must do so within **one week** of the day the exam key is released.

During remote delivery this quarter, I will post the test to CANVAS 5 minutes before the start of the lecture. You will print out the exam (if no printer, copy from the screen on another piece of paper) and will have the entire lecture period (9:30 AM – 10:20 AM) to complete the exam plus an extra 10 minutes to load the files to CANVAS. Please let me know if you think there will be any issues with this way of testing *before* the test and we can make arrangements. I apologize for this way of testing, but the goal is minimize use of the computer during the exam.

Lecture Quizzes. Quizzes will be given between the exams to make sure everyone is keeping up with the material throughout the quarter. The quizzes are worth **30 points** each, will take about 20 minutes, and will be given at the beginning of class, so late attendance may result in missing time for the quiz. The day of the quizzes are given on page 11 but may change depending on how quickly we move through the material. Reminders for the quiz and any possible changes in the schedule will be announced through email and on CANVAS.

The delivery of these will be similar to the exams. I will post 5 minutes before, you will have 20 minutes to take the quiz, then 5 minutes to upload to CANVAS.

Lecture Final. The lecture final is worth **150 points** and will cover all chapters, but will have more from chapter 20, since there will have not yet been any testing on that chapter. The date and time for the final are given on page 11 and will not change. Delivery the same as the other exams.

Homework. Homework will not be turned in for credit, but will provide the practice needed for concept mastery. The list of homework problems is on page 12. These homework problems will be from the end of the each chapter and will cover calculations as well as conceptually based problems. I will also give a solution key so you can check your work.

Doing all of the listed problems is highly recommended and represents the minimum needed to practice the topics, but you are strongly encouraged to go beyond the listed problems and try other problems throughout the book. Test questions will be similar to homework questions, so it is important to practice each problem

Laboratory

This quarter, we will be using specialized lab kits that De Anza has purchased from Science Interactive (SI) to perform chemistry experiments in our own homes. These kits are supported by a cloud platform which provides background information, materials lists, experimental procedures, and sample videos for all of the experiments we will conduct.

Since our lab kits will not ship until the middle of the 3rd week, we won't start the lab kit experiments until the 4th week, and will have a bit of time to fill. We will use this time to go over lab safety, use a simulation program for a lab worksheet, explore IMFs in everyday life, do practice problems, and get ahead in lecture.

Once the kits have arrived, we will use the lab sessions to discuss the background for the experiment as well as how to safely perform the procedures. **Attending all laboratory introductions is mandatory** and missing them will result in a loss of points and potentially prevent you from performing the lab. If there are any reasons that you cannot attend these sessions, please let me know ahead of time, and we can work something out.

Additionally, there will be designated lab periods for live lab help. If you think you might have questions during the procedure, try to overlap your experiment with this time. All lab dates are given on the calendar on page 11 with the mandatory attendance days in **bold**.

What follows are descriptions of the earlier activities as well as how we will obtain the lab kits, safely perform the experiment, and complete the associated assignments like prelabs, calculations, and conclusions.

Student Welcome Questionnaire

To help me get to know you better and ultimately provide better teaching, I have a questionnaire for you to answer and turn in during the first week. With distance education, it is even more essential to build a connection and learning a little more about you and your experience in chemistry so far is a start. While the questions are about you, I am not aiming to be invasive, so please leave any blank that you are not comfortable answering and you will still receive the full **10 points**. I will discuss this more during lab the first week.

Lab Safety

Safety is an essential focus for laboratories and this becomes a unique challenge when you are doing experiments in your house. We will spend time at the beginning of the quarter discussing how to safely and comfortably perform lab work, and a more specific safety introduction will be given before each lab. Additionally, there is a lab safety module through the SI cloud that is worth **5 points** and will give more safety information for the proper use of the lab kits.

Gas Simulation Worksheet

To help fill the lab time before the SI kits arrive, we will use a program from PhET to simulate gases. This program is free and allows us to alter certain conditions of the gas and measure the effects. This program and the associated worksheet will be introduced during the lab sessions of the second week, and the assignment is worth **25 points**.

Exploring IMFs

Before we have our lab kits, we will do a researched based project where we will explore the intermolecular forces all around us (and within us). This project aims to broaden the context of intermolecular forces (chapter 12) by showing how they influence everyday life as well as provide experience researching relevant information. This assignment will be discussed more during the third week of lab and is worth **20 points**.

How to Get the Lab Kits

Once census day has passed, and there can be no more adds or drops, you will order these special SI kits. The cost for the lab kit and shipping will be covered by De Anza and will be available to order between 10/5/21 and 10/15/21. On the first week of lab, we will discuss how to order these kits. Please do this on as soon as possible (10/5) to be sure you receive your kit before it is time to start experiments. Shipping so far has been quick for locations within the US, but international shipping was not as dependable, so please let me know as soon as possible if you are living internationally.

While the cost of the kits is covered, some experiments require you to provide some materials. A lot of these items are things that you will likely already have in the house, such as paper towels or ice. Others are a little less common and will likely require purchasing them. There is nothing expensive, but making sure these items are available when it is time for the experiment will require ordering early, so I will post a list of the needed material to CANVAS. If the cost is an issue, please let me know, and we can find a solution.

Lab Kit Check

Once the lab kit arrives, checking it to make sure everything on the inventory list is actually in the box is worth **5 points**. The last few quarters, there have been quite a few issues with chemical and equipment, so making sure you have everything as early as possible will give the time needed for SI to send you the missing item in time to perform the experiment. You don't need to turn anything in for this assignment.

Lab Assignments (with SI kits)

There will be a total of 4 labs that we will perform using the SI lab kits. For each experiment, you are required to attend the introductory lecture, read the procedure, complete a prelab, perform the procedure, answer the follow-up questions/calculations, and write a conclusion.

For each experiment, I will give an introduction that will typically include a discussion of the theory behind the experiment as well as a walkthrough of the harder aspects of the procedure. Missing these will result in a loss of points and may prevent timely experiment completion.

The first thing to do to prepare for the lab is to *read the entire experiment*, including the background, procedure, and materials list. It is essential to become familiar with the experimental design and procedures before starting with the lab work, and this starts with a thorough read-through of the methods. The background information and related procedures are provided on the SI cloud, and you will be given access to the class shell in the first week of class.

Since you are **not required to do any work on the SI cloud this quarter**, this information will also be provided as pdfs on CANVAS. I want to reiterate here, that the SI cloud contains lots of questions that will help with background information and follow-up calculations, but none of these will count towards points. The SI cloud system will only be used for reference and for the safety module.

Once you have familiarized yourself with the lab, the next step is to write a **prelab, worth 15 points**. There are three parts to the prelab that are equally important. The first is to write an **abstract**, where you will describe the goals of the experiment, introduce the scientific principles that form the basis of the study, and summarize the process by which you obtain the experimental data. This should not be a list of procedural steps, but rather 1-3 paragraphs of writing, in your own words.

The second part is a recognition of the **hazards** associated with each chemical in the procedure. This does not need to be everything on the SDS but should convey the hazards working with that chemical and the proper precautions for safe usage.

The third part of the prelab is to write **tables** to hold the data you will collect. Great examples for tables can be found on the SI cloud but you are encouraged to make your own table based on the procedure. All parts of the prelab must be completed before beginning the experimental procedure. Scan/take pictures of the work and upload them to the appropriate CANVAS assignment.

Then, **complete the procedure to obtain the desired data**. All data must be collected in the premade tables (see the previous paragraph). Additionally, there will be picture you are required to take throughout the experiment that are specific for each experiment and will be discussed during the lab introduction. Upload all of this to the appropriate CANVAS assignment for **10 points**.

I don't really like the questions on the SI cloud, so I wrote some and a pdf of these questions will be available at the beginning of each experiment. You will use your experimental data to **perform the calculations and answer the questions** on these worksheets, worth **10 points** each.

The last task is to write a **conclusion**. This section is the most important and often the most difficult because it requires deep consideration of the experiment as a whole. The conclusion should contain at least these three sections.

The first is a summary of the experiment, including the main goal and the methods used to collect/analyze data. This part should not be more than a paragraph and will be very similar to some of the content in the abstract.

For the next section, **present the key values**. Many of the experiments require collecting a large amount of raw data, but including all of these values is not the point of this section. Only include the values or conclusions that directly relate to the experimental goal.

Additionally, **compare** one trial to the next and/or compare the average value to literature values.

Finally, provide a source of error that may have resulted in discrepancies between trials or between experimental averages and accepted values. This description should go beyond simple factors like human error and should connect an aspect of the experimental design or procedural step to any discrepancies between the experimental and expected values. That is, explain how an error could have affected your result by following this error through the calculation process.

The conclusion will be submitted through CANVAS and will be worth **15 points**.

Formal Laboratory Report. For the Beer's Law lab, you are required to do a formal, typed report worth **75 points**, rather than a conclusion like the other labs. In scientific research, conveying what you have discovered in a clear, concise manner is essential to making your new ideas accessible to others and allowing your contributions to help the world.

It may feel like something completely new if you have not done a scientific report, and that is okay. We will not be doing everything that a manuscript would require but rather looking to gain familiarity with presenting an experimental study. I will talk about the specifics during the introduction for this lab, and I will provide an instructions sheet to help with the structure of this report.

The due date is 11/28 by 11:59 PM, so there is plenty of time to get help. Please make sure to start the calculations earlier and try to not leave too much work for the end.

Lab Final. The lab final will test your understanding of the theories utilized in lab sections this quarter as well as the practices implemented to yield meaningful data. This exam will be on the last week of class and is worth **100 points**. You will be allowed to use any notes you take during this test, so it is beneficial to organize your work. The lab final date is 12/1 during the synchronous lab hours. No early or late exams will be allowed. The testing format will be the same as the lecture exams. No working with chemicals required.

Lecture Schedule

All dates, including exams and quizzes, are subject to change throughout the quarter. The final exam date will not change. Lecture topics are in black, labs are in blue, holidays are in green, quizzes are in orange, and exams are in red.

Week Of	Week #	Monday	Wednesday	Friday
9/19/20	1	Chapter 5 (Gases)	Chapter 5 (Gases)	Chapter 5 (Gases)
9/26/20	2	Check In Quiz 1 Chapter 5 (Gases)	Chapter 5 (Gases)	Chapter 12 (IMFs)
10/3/20	3	Chapter 12 (IMFs)	EXAM 1	Chapter 12 (IMFs)
10/10/20	4	Chapter 12 (IMFs)	Chapter 12 (IMFs)	Chapter 12 (IMFs)
10/17/20	5	Chapter 16 (Kinetics)	Chapter 16 (Kinetics)	EXAM 2
10/24/20	6	Chapter 16 (Kinetics)	Chapter 17 (Equilibrium)	Chapter 17 (Equilibrium)
10/31/20	7	Check In Quiz 2 Chapter 17 (Equilibrium)	Chapter 17 (Equilibrium)	Chapter 17 (Equilibrium)
11/7/20	8	Chapter 18 (Acids/Bases)	Chapter 18 (Acids/Bases)	EXAM 3
11/14/20	9	Chapter 18 (Acids/Bases)	Chapter 18 (Acids/Bases)	Chapter 18 (Acids/Bases)
11/21/20	10	Check In Quiz 3 Chapter 20 (Thermodynamics)	Chapter 20 (Thermodynamics)	THANKSGIVING, No Lecture
11/28/20	11	Chapter 20 (Thermodynamics)	Chapter 20 (Thermodynamics)	Review/Catch-Up

LECTURE FINAL EXAM MONDAY December 6, 9:15 AM-11:15 AM

Tentative lab schedule

Week Of	Week #	Monday	Wednesday
9/19/20	1	Mandatory – Introduction and Syllabus Part 1	Mandatory – Syllabus Part 2 -SI Start and Lab Safety
9/26/20	2	Mandatory - Gas Law Exploration 1 Worksheet Introduction Part 1	Mandatory - Gas Law Exploration 1 Worksheet Introduction Part 2
10/3/20	3	Optional – Molecular Shapes Review and Worksheet	IMF Worksheet
10/10/20	4	Mandatory – Chapter 12 Practice Problems	Mandatory - Kinetics Lab Intro 1
10/17/20	5	Mandatory - Kinetics Lab Intro 2	Optional – Live Lab Help Day
10/24/20	6	Mandatory – Equilibrium Practice Problems	Mandatory – Equilibrium Lab Intro
10/31/20	7	Mandatory – Equilibrium Practice Problems	Optional – Live Lab Help Day
11/7/20	8	Mandatory – Beers Law Intro 1	Mandatory – Beers Law Intro 2
11/14/20	9	Optional – Live Lab Help Day	Mandatory – Acid/Base Practice Problems
11/21/20	10	Mandatory – Boyle’s Law Lab Intro	Optional – Live Lab Help Day
11/28/20	11	Optional – Office Hours	Lab Final

Homework

Homework will **NOT** be turned in for credit, but doing all of these is highly recommended for practice and overall concept mastery. These problems are chosen as the minimum needed to practice the topics, but you are strongly encouraged to go beyond the listed problems and try other problems throughout the book. Test questions will be similar to homework questions, so it is important to practice each problem and get help when you need it. I will release an answer key for the problems, but it will correspond to the 9th edition only.

Chapter	Problems
5	2, 7, 8, 9, 11, 14, 20, 23, 24, 27, 30, 33, 37, 45, 49, 55, 73, 74, 77, 82, 85, 88, 93, 99, 117
12	1, 4, 10, 11, 13, 15, 18, 24, 32, 38, 39, 40, 42, 49, 52, 63, 70, 72
16	Part 1 – 1, 3, 8, 10, 15, 20, 25, 26, 35, 42, 44, 47, 48, 49, 51, 54, 56, 61, 63, 92 Part 2 – 72, 75, 76, 80, 81, 87, 96, 113
17	2, 3, 4, 7, 12, 13, 16, 22, 29, 31, 35, 42, 45, 50, 51, 59, 61, 69, 70, 74
18	3, 4, 7, 12, 13, 15, 17, 19, 25, 31, 33, 35, 53, 56, 59, 69, 71, 83, 98, 110
20	2, 4, 5, 9, 13, 14, 17, 22, 23, 33, 38, 44, 49, 52, 54, 58, 63, 68, 75, 89, 104

Lab Safety/Preparedness

Maintaining safety when performing experiments is a primary concern. There are many hazards associated with chemistry labs, especially now that you will be experimenting in your house. It is essential to recognize these hazards and understand that with proper techniques, the risk drops significantly. There are a few very simple steps students should take to execute safe lab techniques.

First, always wear personal protective equipment (PPE) when performing lab experiments. Such items include, but are not limited to, safety goggles, long pants, sleeved shirts, and closed-toe shoes. **All of this safety equipment must remain on until you complete the experiment, including cleanup.** A detailed list containing safe lab procedures and general practices is given on the next and must be reviewed and signed before starting experiments.

Second, read the lab procedure BEFORE executing the lab procedure. Notes, facts, or some recognition of the hazards is required for the prelab to ensure the section on safety has been read. Reading the procedure ahead of time and knowing what tasks are at hand will also help the experiment go smoothly.

Finally, listen carefully to the directions provided by the instructor. Many techniques can be performed safely and easily with the proper technique but become a safety hazard when performed improperly

What follows is a list from the American Chemical Society Safety In Academic Laboratories Guidelines, 7th Ed., the following mandatory minimum safety requirements must be followed by all students and be rigorously enforced by all Chemistry faculty:

From the American Chemical Society Safety In Academic Laboratories Guidelines, 7th Ed., the following mandatory minimum safety requirements must be followed by all students and be rigorously enforced by all Chemistry faculty:

- 1)** Chemistry Department-approved safety goggles purchased from the De Anza College bookstore (NOT safety glasses) must be worn at all times once laboratory work begins, including when obtaining equipment from the stockroom or removing equipment from student drawers, and may not be removed until all laboratory work has ended and all glassware has been returned to student drawers.
- 2)** Shoes that completely enclose the foot are to be worn at all times; NO sandals, open-toed, or open-topped shoes, or slippers, even with socks on, are to be worn in the lab
- 3)** Shorts, cut-offs, skirts or pants exposing skin above the ankle, and sleeveless tops may not be worn in the lab: ankle-length clothing must be worn at all times
- 4)** Hair reaching the top of the shoulders must be tied back securely
- 5)** Loose clothing must be constrained
- 6)** Wearing "...jewelry such as rings, bracelets, and wristwatches in the laboratory..." should be discouraged to prevent "...chemical seepage in between the jewelry and skin...".
- 7)** Eating, drinking, or applying cosmetics in the laboratory is forbidden at ALL times, including during lab lecture
- 8)** Use of electronic devices requiring headphones in the laboratory is prohibited at ALL times, including during lab lecture
- 9)** Students are advised to inform their instructor about any pre-existing medical conditions, such as pregnancy, epilepsy, or diabetes, that they have that might affect their performance.
- 10)** Students are required to know the locations of the eyewash stations, emergency shower, and all exits
- 11)** Students may not be in the lab without an instructor being present
- 12)** Students not enrolled in the laboratory class may not be in the lab at any time after the first lab period of each quarter.
- 13)** Except for soapy or clear rinse water from washing glassware, NO CHEMICALS MAY BE Poured INTO THE SINKS; all remaining chemicals from an experiment must be poured into the waste bottle provided.
- 14)** Students are required to follow the De Anza College Code of Conduct at all times while in lab: "horseplay", yelling, offensive language, or any behavior that could startle or frighten another student is not allowed during lab;
- 15)** Strongly recommended: Wear Nitrile gloves while performing lab work; wear a chemically resistant lab coat or lab apron; wear shoes made of leather or polymeric leather substitute.

By signing below, I, _____,
First Name Family Name

acknowledge that I fully understand and agree to abide by the laboratory safety rules listed above. Further, I acknowledge that my failure to abide by these rules will result in my being dropped from this chemistry class immediately.

Signature

Date

Student Learning Outcome(s):

*Evaluate the principles of molecular kinetics.

*Apply principles of chemical equilibrium to chemical reactions.

*Apply the second and third laws of thermodynamics to chemical reactions.